

### ABSTRACT

GW413p3 In accordance with the present invention, an electroplating solution is provided for electroplating satin bright tin-bismuth alloy solder coatings in high speed electroplating applications. The solution comprises a sulfonic acid electrolyte, a soluble tin compound, a soluble bismuth compound, a non-ionic surfactant, a grain refiner and an antioxidant. The preferred non-ionic surfactant comprises a mixture of polyethylene glycol-block-polypropylene glycol, polyethylene glycol-ran-polypropylene glycol, and ethylenediamine tetrakis (polyethylene glycol-block-polypropylene glycol) tetrol.

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